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<b>TRANSMITTAL FORM</b>  (to be used for all correspondence after initial filing)	Application Number	10/057,356	
	Filing Date	01/25/2002	
	First Named Inventor	Brian WHITTY	
	Group Art Unit	3677	
	Examiner Name	BRITTAIN, J.	
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A handwritten signature in cursive script that reads "J R Yabsley".

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**PROVISIONAL SPECIFICATION**

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**Invention Title:** Leg-rope connection device.

The invention is described in the following statement:

## **Leg-rope Connection Device**

### **Technical Field**

5 The present invention relates to a leg-rope connection device, and in particular, to a surfing leg-rope connection device which may be used in a variety of environments. For example, if the urethane rubber of a surfers leg-rope is broken the leg-rope connection device may be utilised to rejoin the broken urethane rubber portions whilst the surfer remains in the water.

10

### **Background Art**

A leg-rope is a device used when riding a surfboard. The leg-rope is attached to a surfer's leg via a neophrene velcro strap at one end of the leg-rope, and to the  
15 surfboard via a velcro strap at the other end of the leg-rope. Thus, the leg-rope results in the surfboard remaining within the vicinity of the surfer if the surfer falls from the surfboard. It is desirable that the surfboard remain within the vicinity of the surfer for the safety of the surfer, and to prevent the surfer having to chase the surfboard by swimming. Additionally, a leg-rope prevents the surfboard travelling  
20 to the beach or onto rocks or reef which may result in the surfboard being damaged.

A leg-rope is typically manufactured from a long cylindrical strip of urethane rubber approximately 6 to 8 mm in diameter and 2 m in length with the velcro/neophrene straps disposed at the ends. When a surfer falls from a surfboard  
25 substantial forces may be applied to the urethane rubber strip as water movement in the ocean acts to pull the surfboard away from the surfer. This may result in the urethane rubber strip being snapped. Furthermore, various other situations encountered whilst surfing may result in or require the urethane rubber strip to be broken or cut.

30

Presently, if the urethane rubber strip of the leg-rope is snapped, broken or cut the

leg-rope is rendered useless. The surfer must then exit the ocean to obtain a replacement. In many cases this can be difficult when surfing at remote locations such as outside ocean reefs or rocky points. At present, there is no known method of repairing or joining the urethane rubber strip of the leg-rope whilst remaining in the ocean.

This identifies a need for a leg-rope connection device capable of being utilised by a surfer without requiring the surfer to exit the ocean.

- 10 The present invention seeks to provide a device which may be carried by a surfer whilst surfing and may be used in the event that the surfer's leg-rope is snapped.

#### **Disclosure Of Invention**

- 15 The present invention according to one aspect provides a leg-rope connection device including a housing which encloses a portion of the leg-rope, and a clamping member associated with the housing, whereby said clamping member associates with the leg-rope in a manner such that said portion of the leg-rope is retained within the housing when subjected to typical forces applied to the leg-rope when in use.

20

In another preferred form of the invention there is provided a leg-rope connection device whereby, the housing is a substantially rigid cylindrical shape containing bores which receive screws, said screws capable of abutting the leg-rope such that the leg-rope is retained within the housing.

25

The present invention according to yet another aspect provides a leg-rope connection device whereby, the screws have a recess in the screw heads to receive a screw rotation tool, and the tips of the screws have a surface shape or configuration which aids in gripping the leg-rope.

30

In another preferred form of the present invention there is provided a leg-rope connection device whereby, swing cleats are disposed internal to the housing and

are attached to the housing, the swing cleats structured such that the leg-rope may be pushed inwards past a swing cleat pair but clamping action of the swing cleat pair prevents withdrawal of the leg-rope.

- 5 The present invention according to yet another aspect provides a leg-rope connection device whereby, the swing cleats have associated swing cleat members containing serrated surfaces thereby helping prevent withdrawal of the leg-rope.

10 In yet another preferred form of the present invention there is provided a leg-rope connection device whereby, the housing is partitioned into two sections, either one or both of the sections containing saddle clamp members rigidly fixed to the housing section/s, the sections being provided with means to clamp together about the leg-rope.

- 15 The present invention according to yet another aspect provides a leg-rope connection device whereby, a first section of the housing has an associated latch member or members which may be received by a latch recess or recesses disposed on a second section of the housing, the clamping of the first and second sections of the housing together about the leg-rope thereby preventing withdrawal of the leg-rope.

20 The present invention according to yet another aspect provides a leg-rope connection device whereby, the first and the second sections of the housing are hinged at one edge of each section.

- 25 The present invention according to yet another aspect provides a leg-rope connection device whereby, a portion of the housing itself forms clamping jaws, the clamping jaws being forcibly pushed into contact with the previously inserted leg-rope by the action of a ferrule which is pushed or pulled towards an end of the housing.

30 The present invention according to another aspect provides a leg-rope connection

device whereby, the clamping jaws have thread on their exterior surfaces such that the ferrule, having an associated thread, when rotated is forced towards an end of the housing and subsequently clamps the jaws onto the leg-rope.

- 5 In another preferred form of the invention there is provided a leg-rope connection device whereby, the jaws are tapered.

The present invention according to another aspect provides a leg-rope connection device whereby, the housing contains slits, disposed within the slits are tapered  
10 jaws, said tapered jaws being forcibly pushed into contact with the leg-rope by the action of a ferrule.

The present invention according to another aspect provides a leg-rope connection device whereby, the housing has thread on its exterior surface such that the ferrule,  
15 having an associated thread, when rotated is forced towards an end of the housing and subsequently clamps the jaws onto the leg-rope.

The present invention according to another aspect provides a leg-rope connection device whereby, the housing is manufactured from a rigid polymeric material.  
20

The present invention according to yet another aspect provides a leg-rope connection device whereby, the cylindrical housing is approximately 6 to 15 mm in diameter and 10 to 40 mm in length with an internal diameter of 6 to 10 mm.

25 The present invention according to yet another aspect provides a leg-rope connection device whereby, the internal surface of the cylindrical housing has a textured, roughened, toothed, jagged or similar surface thereby improving the retention of the leg-rope within the housing.

30 In another preferred form of the invention there is provided a leg-rope connection device, substantially according to the embodiments contained within the specification with reference to and as illustrated in the accompanying figures.

## **Brief description Of Drawings**

5 The present invention will become better understood from the following detailed description of preferred but non-limiting embodiments thereof, described in connection with the accompanying drawings, wherein:

- Figure 1 illustrates a preferred embodiment of the present invention wherein, the figure shows a representation of the leg-rope connection device utilising  
10 clamping screws.
- Figure 2 illustrates a further preferred embodiment of the present invention wherein, the figure shows a representation of the leg-rope connection device utilising swing cleats.
- Figure 3 illustrates a further preferred embodiment of the present invention  
15 wherein, the figure shows a representation of the leg-rope connection device utilising saddle clamps.
- Figure 4 illustrates another preferred embodiment of the present invention wherein, the figure shows a representation of the leg-rope connection device utilising flexible jaws.
- 20 • Figure 5 illustrates yet another preferred embodiment of the present invention wherein, the figure shows a representation of the leg-rope connection device utilising tapered jaws.
- Figure 6 illustrates yet another preferred embodiment of the present invention wherein, the figure shows a representation of the leg-rope connection device  
25 utilising swing cleats.

## **Modes For Carrying Out The Invention**

A preferred, but non-limiting, embodiment of the present invention is shown in  
30 figure 1. The leg-rope connection device 1 includes a rigid housing 2 which in this embodiment is a cylindrical tube. The cylindrical tube contains two bores 3, each bore containing threading. In use, one portion of the broken urethane rubber of a



leg-rope 4 is inserted into one end of the housing 2, the other portion of the broken urethane rubber of the leg-rope 5 being inserted into the alternate end of the housing 2. Once the urethane rubber has been inserted the screws 6 are rotated thereby causing the screws to translate into the housing. The screws are inserted into the housing until they tightly clamp the urethane rubber portions. This results in the urethane rubber portions being fixed within the housing, thereby providing a mechanical join between the broken portions of the leg-rope.

Typically, the urethane rubber strip is approximately 6 to 8 mm in diameter and 2 m in length. The size of the urethane rubber strip determines the dimensions of the leg-rope connection device. For example, the cylindrical tube defining the housing 2 may have a 6 to 8 mm inside diameter, however, the leg-rope connection device may be provided in a variety of dimensions not limited to the aforementioned inside diameters.

The screws 6 may be any kind of a variety of screws, for example, the screws may be grub screws. Furthermore, the screws may be provided with a recess in the head of the screws to receive a screw rotation tool. In one specific embodiment the recess in the head of the screws may be hexagonal in shape so as to accommodate an alan-key. It should be noted however, that any device which effects rotation of a screw may be used. The screws 6 may also be provided with a textured, roughened, teathed, jagged or similar type of surface at the tip of the screws which abuts the leg-rope thereby improving the grip of the screws against the urethane rubber.

In another preferred, but non-limiting, embodiment of the present invention there is provided swing cleats 7 internal to the housing 2 of the leg-rope connection device 1 as represented in figure 2. The swing cleats are attached to the housing by means which allows the swing cleats to rotate about an axis in one direction only. As the leg-rope is pushed into the housing the swing cleats allow the leg-rope to be inserted by rotating in there allowed direction, however when the leg-rope is

attempted to be removed from the housing the swing cleats prevent removal by being locked against the alternate direction of rotation.

5 In the present embodiment four swing cleats are used, the four swing cleats forming two pairs. Each swing cleat may be further provided with a swing cleat member 8 which aids in retaining the leg-rope within the connection device. The swing cleat members may be a variety of shapes and may further be provided with serrations to assist in gripping the urethane rubber of the leg-rope. It should be noted that it is not necessary that swing cleat members be provided at all, it may be sufficient to  
10 provide serrations on the surface of the swing cleats themselves to enable adequate clamping of the leg-rope.

It is an obvious adaptation of the present invention to provide swing cleats in various configurations, for example, swing cleats may be provided as one, two,  
15 three, four, etc. pairs, or alternatively as a multiple of single swing cleats.

A further preferred, but non-limiting, embodiment of the present invention is shown in figure 3. The leg-rope connection device 1 includes housing 2 which is partitioned into two sections. One or both of the sections of the housing is provided  
20 with saddle clamp members 9. In the embodiment shown in figure 3 a saddle clamp member has an associated saddle clamp member on the other section of the housing, the associated pair of saddle clamp members being located relative to each other such that they clamp opposing surfaces of the leg-rope.

25 It should be noted that saddle clamp members may be provided in any location on either of the sections of the housing, and in any configuration or number, so that effective clamping of the leg-rope is obtained. For example, saddle clamp members need not be provided as associated pairs, but rather in a configuration whereby a saddle clamp member pushes the leg-rope against the interior surface of the  
30 housing.

As shown in figure 3 the housing sections may be hinged at one edge by certain means. For example, hinging means may be provided by the sections of the housing being substantially formed from one piece of material with the material being flexible at the hinged location. Once the sections of the housing are enclosed about the leg-rope, latch members 10 provided on one section of the housing associate with latch recesses 11 provided on the other section of the housing thereby fixedly clamping the two sections about the leg-rope.

Alternatively, the housing sections may not be hinged but may be provided with a configuration of latch members and latch recesses on each edge of the housing sections enabling clamping of two disjoint housing sections together about the leg-rope.

An alternative, but non-limiting, embodiment of the present invention is shown in figure 4. In this particular embodiment of the leg-rope connection device 1 the housing 2 is splintered into a set of jaws 12 at either end of the housing. The jaws integrally form the housing but have a degree of flexibility so that a leg-rope may be inserted between the jaws when they are in an expanded state, but when the jaws are collapsed the leg-rope is clamped in position and may not be withdrawn from the housing/jaws. A ferrule 13 is provided for each set of jaws of the connection device. When the ferrule is pushed or pulled towards an end of the housing it closes a set of jaws.

Additionally, the exterior surface of the housing and/or jaws may be threaded 14 and the interior surface of the ferrules may have an associated thread. Thus when a ferrule is rotated the threading causes the ferrule to move towards an end of the housing thereby clamping a set of jaws 12 about a previously inserted leg-rope. The interior surface of the jaws may also be provided with teeth or serrations or the like to assist in preventing the leg-rope from being withdrawn from the housing and/or jaws. It should be noted that the configuration of jaws shown in the figure is a non-limiting example of one possible configuration, for example, each set of jaws may comprise 2, 3, 4, ... jaw fingers.

A further alternative, but non-limiting, embodiment of the present invention is shown in figure 5. The housing 2 of the leg-rope connection device 1 contains slits 15. The slits 15 contain tapered jaws 16 which may move in and out of the slits.

5 The tapered jaws are fixed to the housing at the end of the tapered jaw nearest the centre of the housing by means which allows the tapered jaws to protrude into the internal area of the housing via the slits 15. A ferrule 17 is provided with each set of tapered jaws, as the ferrule is pushed or pulled towards an end of the housing the tapered jaws are forced into the housing thereby clamping a previously inserted leg-  
10 rope.

Additionally, the exterior surface of the housing may be provided with thread 18 which associates with thread on the interior surface of each ferrule such that when a ferrule is rotated it is forced towards an end of the housing thereby pushing the  
15 tapered jaws into the housing via the slits and subsequently clamping the leg-rope.

It should be noted that the configuration of each set of tapered jaws shown in the figure is a non-limiting example of one possible configuration, for example, each set of tapered jaws may comprise 2, 3, 4, ... individual jaws. Furthermore, the jaws  
20 16 need not necessarily be tapered but may be a variety of shapes.

A further alternative, but non-limiting, embodiment of the present invention is shown in figure 6. The housing 2 of the leg-rope connection device 1 contains a large slit 19 through which a portion of a swing cleat 20 may protrude. The swing  
25 cleat is partially contained internal to the housing and has its rotational axis 21 perpendicular to the axis of symmetry of the cylindrical housing 2.

The swing cleat member 20 may have serrations or similar gripping units on its surface/s facilitating an improved grip on the urethane rubber of a leg-rope 4. Also  
30 provided is a v-shaped member 22 internal to the housing which may contain serrations or the like upon its surface. Once a leg-rope has been inserted into the housing the swing clamp may be pushed inwards thereby abutting the leg-rope, the

leg-rope in turn being forced against the surface of the v-shaped member. The leg-rope is thus rendered securely clamped between the swing cleat and the v-shaped member.

- 5 It should be noted that various other configurations of swing cleats may be envisaged which utilise a slit or cut-out in the housing. For example, separate slits may be provided for each of the swing cleats.

10 Additionally, one, two, three etc. swing cleats may be used at each end of the housing and more than one v-shaped member may be utilised.

Any of the embodiments of the present invention may be manufactured from a variety of materials, for example, the housing or any other component of the leg-rope connection device may be manufactured from a rigid polymeric material. The  
15 present invention is not limited to manufacture from polymeric material but may be comprised of any other material or materials providing a sufficient degree of clamping of the leg-rope connection device to the urethane rubber of the leg-rope.

20 The internal surface of the housing of any of the embodiments of the present invention may additionally be provided with a textured, roughened, teathed, jagged or likewise surface thereby improving the retention of the leg-rope within the housing.

25 Furthermore, the exterior surface of the leg-rope connection device may be of a shape which aids in reducing the frictional drag on the connection device while moving in the water.

30 Thus, there has been provided in accordance with the present invention, a leg-rope connection device which satisfies the advantages set forth above and overcomes the problems hereinbefore discussed.

Although the preferred embodiment has been described in detail, it should be understood that various changes, substitutions, and alterations can be made herein by one of ordinary skill in the art without departing from the spirit of scope of the present invention.

5

Dated this 23rd day of July 1999

**BRIAN WHITTY**

By His Patent Attorneys

**DAVIES COLLISON CAVE**

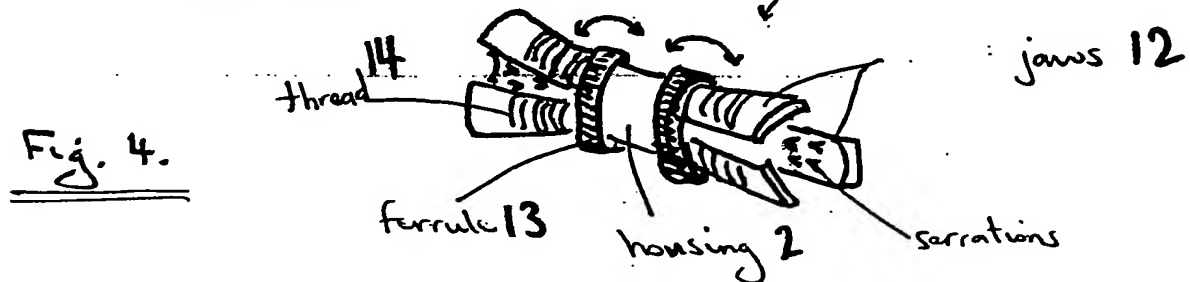
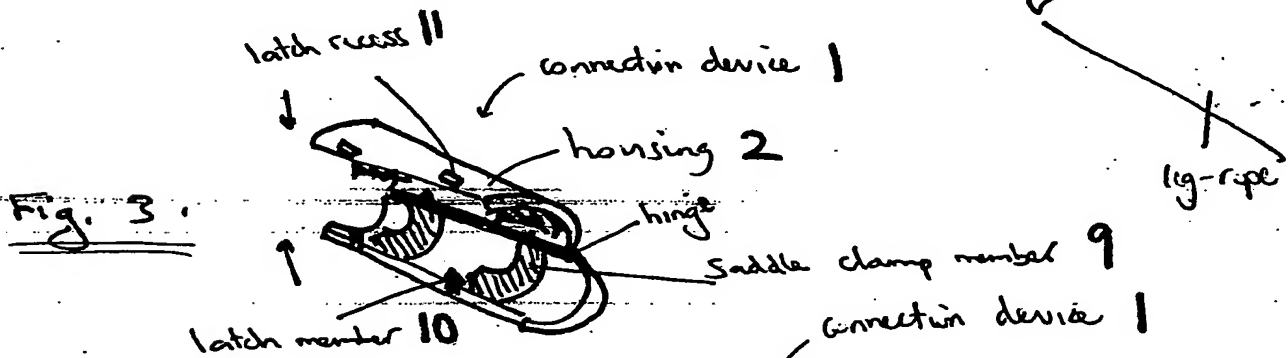
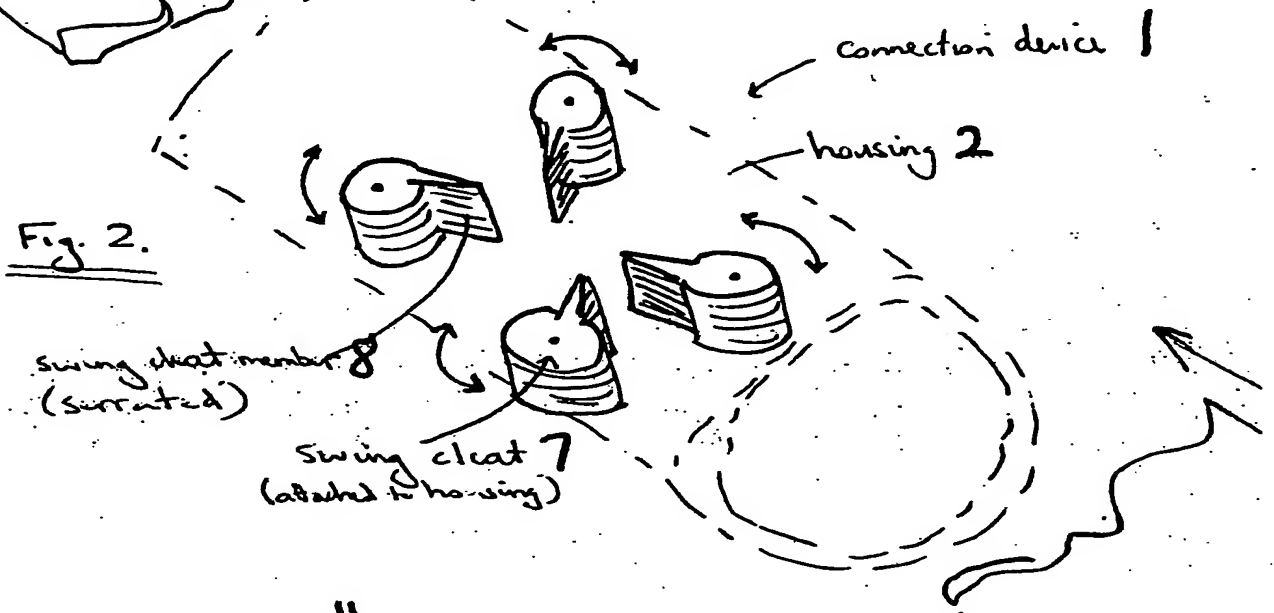
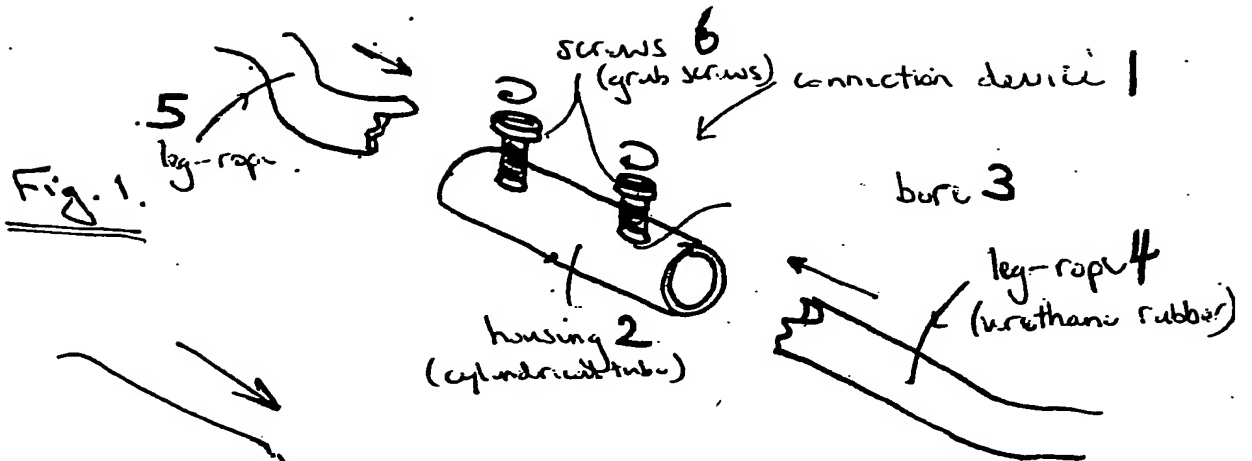


Fig. 5

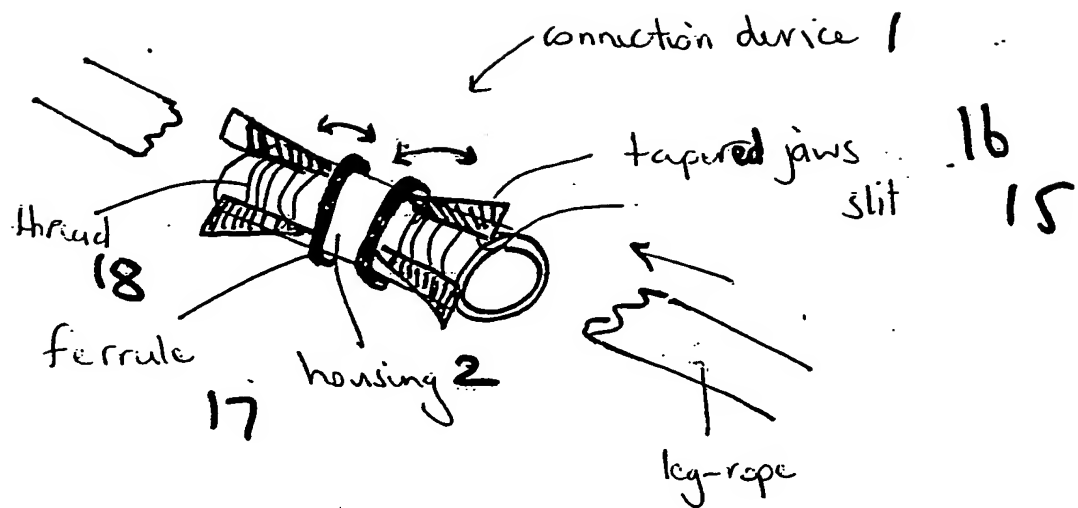


Fig. 6

